Team MAGTF C4ISR

Intelligence Operations Systems
C2 OAG Brief

John Williamson
Project Engineer Team Lead
Code 616
SPAWAR Systems Center Charleston, SC
(843) 218-5803
williamj@spawar.navy.mil

Agenda

- TCO / IAS Program Overview
- IOS Systems Description
- IOW refresh
- Training (MISTC, NET)
- IOS / AFATDS Interface
- Follow-on Efforts
  - 3.6 Block Software Release
  - 4.X migration plan
  - Common Server(GCCS, IAS, TCO)

TCO / IAS Program Overviews

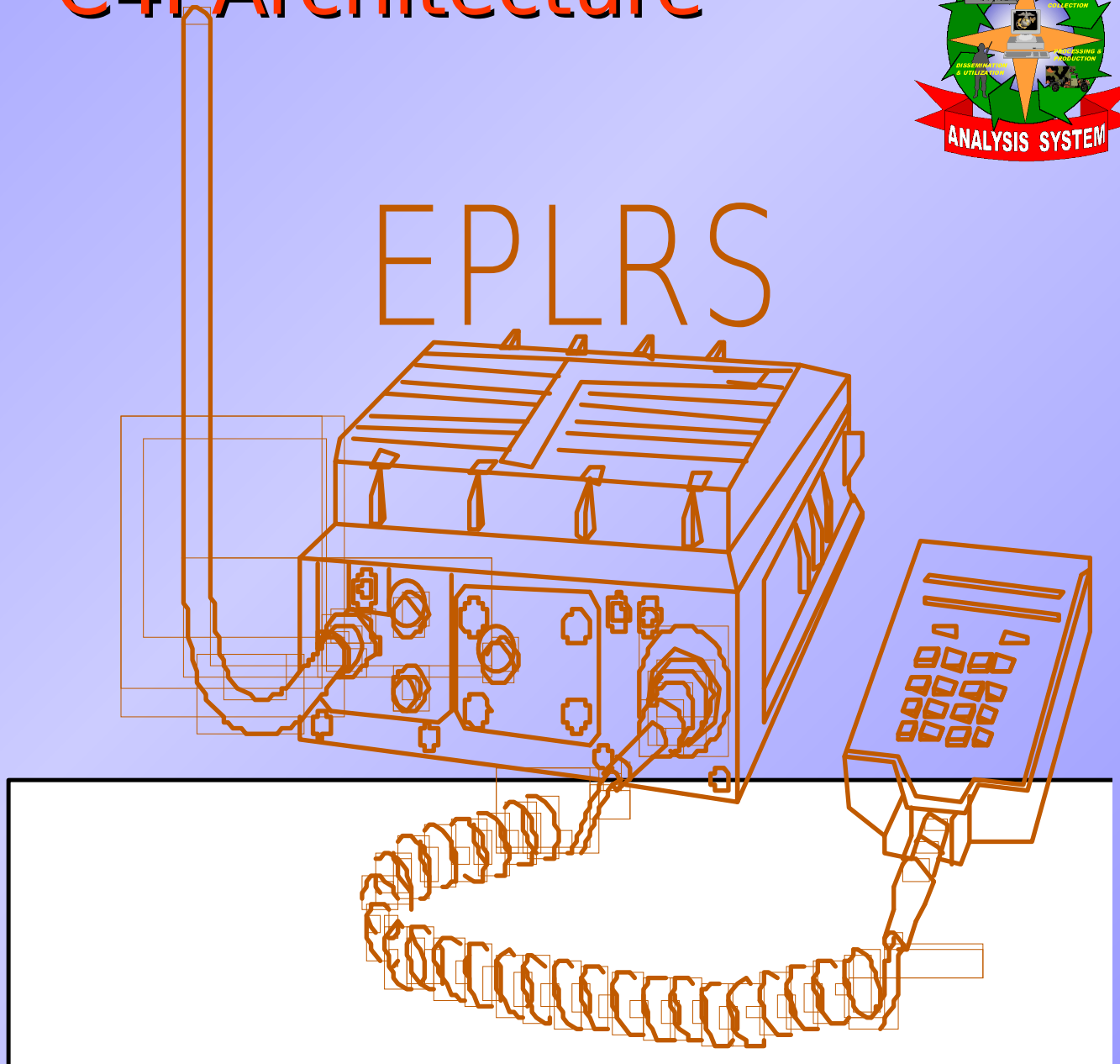
Tactical Combat Operations (TCO)

TCO is the principal tool within MAGTF Operations sections for situational awareness through distribution of a Common Tactical Picture. It is used to display maps; display friendly and enemy unit locations; and develop, display and transmit overlays and plans of intended movement

Intelligence Analysis System Family of Systems (IAS)

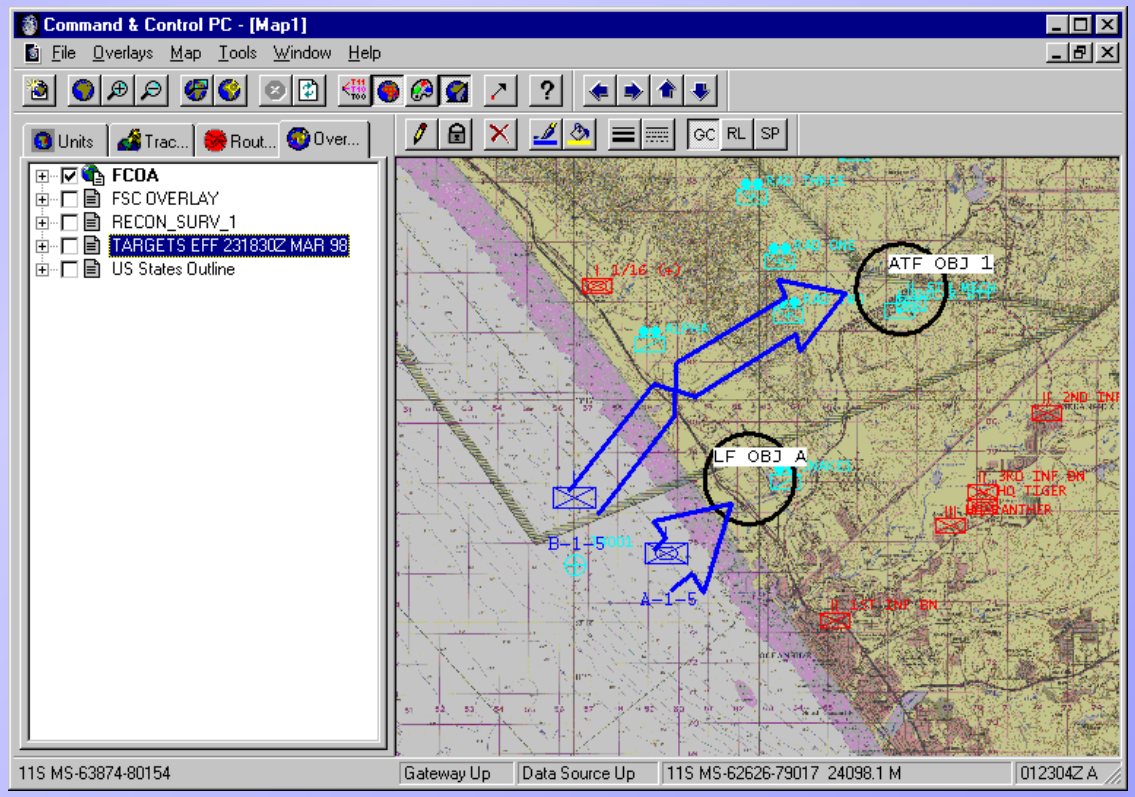
IAS is the principle tool within MAGTF Intelligence sections that provides the capability to receive, process, analyze, display and disseminate large quantities of all-source intelligence information and

C4I Architecture



Common Operational Picture (COP)

TCO and **IAS** together integrate the Common Operational Picture (COP) that supports tactical decision making by Marine Commanders



IOS Systems

Sun Netra t1125

Solaris 2.5.1
- 2 x 440 MHz CPUs
- 1000 MB of RAM
- 2 x 36 GB HDD
- 36x CD-ROM
- Internal DDS-3 Tape

Panasonic CF-28 ToughBook

Windows 2000
- Pentium III 600 MHz
- 256 MB RAM (Ops)
- 384 MB RAM (Intel)
- 20 GB HDD
- CD-RW Module
- Floppy Disk Drive

The Intelligence Operations Server

Sun Netra t1125

Fielded To Regiment & Above in FY 01

Intelligence Operations Server

IOS (V2) Intelligence
(Partial Configuration)

IAS Reduced Foot Print

IOW Refresh

- Replacement of IBM 770 with Panasonic CF-28
- Replacement of IOW Case A and peripheral
- Software Upgrade to Version 3.3.2.0
  - Includes IOS, IOW and IAS Client
- ECP for IOS V2
  - Memory upgrade (IOS, IAS Client)
  - Databook
  - CD/RW Drive
  - Printer

IOW Refresh
Old Workstations

Windows NT
- Pentium III 233 MHz
- 128 - 256 MB RAM
- 5.1 GB HDD
- CD Module
- Floppy Disk Drive

Hardware Issues

- Ageing IBM 770s
- Slow Processor Degrades Usability
- Maxed Out Hard Drives & RAM
- Manufacturer Warranties Ending

Software Issues

- Newer versions of Command Control Personal Computer (C2PC) Software will not run on the older IOW Laptops
- Greater Emphasis on Graphics & Imagery

Plus…The Pace of Technology!

IOW Refresh
New Workstations

Hardware

- Common across multiple programs (IOW, IAS, MEF IAS, ENM, UOC)
- Ruggedized Magnesium Alloy Case
- Touchscreen Liquid Crystal Display
- Moisture Resistant Keyboard,

Software 3.3.2.0

- Image Processing
- Network Collaboration
- Office Productivity
- Message Processing
- Web Server
- C2PC Client / Gateway
- Intel Client
- JWARN
- JTT
- Win 2K Client

IOW Refresh Peripherals

- A New Case 'A'
  - Laptop
  - Printer/Scanner
  - Transit Case

- 2 PPM Color Printer
- 6 PPM B&W
- Color Scanning
- 100 page Li-ion Battery
- USB Connectivity

- Lightweight External Storage Device
- 20 Gigabyte Capacity
- Intelligence (S-2) Units Only

IOW 3.3.2.0 Version Description

- Maintain support for existing IOW 2.0 interfaces.
- Update United States Message Text Format (USMTF) message creation and validation capabilities.
- Update Defense Messaging System (DMS) enabling capability components (User Agent [UA] only).
- Update incoming message reviewing software to support Intelligence Operations Server (IOS) and Marine Expeditionary Force (MEF) Intelligence Analysis System (IAS) interfaces.
- Update core Command and Control Personal Computer (C2PC) software baseline (i.e. C2PC 5.8.2.0 w/Theater Ballistic Missile Defense [TBMD] Injector).

IOW 3.3.2.0 Version Description

- Update Marine Air-Ground Task Force (MAGTF) Intel Client software baseline to Intel Suite 2001 with Decision Support Toolbox (DSTB), Intel Office, and Intelligence Data Management Services (IDMS) application suite.
- Update post installation configuration tools and introduce re-runability Provide time client services.
- Update network collaboration tools.
- Support the Global Command and Control System (GCCS) standard interface network services (i.e. TDBM, IRC, etc).
- Update X-client/server connection support.

IOW 3.3.2.0 Version Description

- Provide Joint Targeting Toolbox (JTT) support.
- Provide Joint Warning and Reporting Network (JWARN) support.
- Provide NBC Analysis support.
- Provide Hazard Prediction and Assessment Capability (HPAC) support.
- Provide Vapor Liquid Solid Tracking (VLSTRACK) support.
- Align system baseline with all Space & Naval Warfare Systems Command (SPAWAR) Systems Center, Charleston, SC (SSCC) USMC 3.3.2.0 systems to include IOW, IOS V2, ENM, MPSIDS, and MEF IAS.

IOW 3.3.2.0 Version Description

- Provide GCCS Integrated Imagery and Intelligence (I3) imagery tools.
- Remove IOW Server variant and migrate server functionality to the MEF IAS system

IOS 3.3.2.0 Version Description

- Provides all functionality present in previous releases of the IOS Solaris Server. Additionally
- Updated Common Operational Picture (COP)/Unified Build (UB) patches
- JAVA-based set of imagery analysis applications
- Meteorological/Oceanographic (METOC) capability
- System administration tools extended to include security tool
- The IOS V1 can view and plot national and tactical intelligence information from the Modernized Integrated Database (MIDB) when properly connected to an IOS V2.
- IOS V1, Sun Server can also view, upload, and download imagery products that are stored in the Imagery Transformation Services (ITS) database on the IOS V2.

How Do We Keep Up?

- Three Year Hardware Refresh Cycle
  - …But in Alternate Years
  - -- IOS Server: FY01, ’04, ‘07
  - -- IOW Workstation: FY02, ’05, ‘08
  - -- Peripherals: Ideally with the IOS or IOW. Otherwise in the ‘Off’ years
- POM Budgeting is Key!

IOW Acquisition Strategy

- MARCORSYSCOM Quantico
  - -- Technology Review & FMF Input
  - -- Purchase New Computers & Peripherals
- SPAWAR Systems Center Charleston
  - -- Integrate Hardware, Software & Cases
- Material Fielding Team Concept
  - -- By MEF Geographical Region
- Training Coincident to Fielding

Who Gets It?

G/S-3 Operations

- All Echelons From MEF/MARFOR Down to the Battalion

S-2 Intelligence

- Primarily Battalion & Squadron
- CF-27s Fielded to Regiment & Above During IOS Server Fielding in FY 01

IOW (3.3.2.0) Refresh Schedule

- MEUs March & May 02
- I MEF April – May 02
- MARFORPAC May – June 02
- III MEF June 02
- Reserves July 02
- II MEF August – September 02

3.3.2.0 Fielding Status

- IOW
  - I MEF = 122 Ops and 66 Intel
  - II MEF = 151 Ops and 74 Intel
  - III MEF = 64 Ops and 12 Intel
  - MARFORRES = 95 Ops and 44 Intel
  - MARFORPAC/Kaneohe Bay = 17 Ops and 13 Intel
  - School Houses and SDF's = 49 Ops and 10 Intel
- The scheduling for the IOW/R fielding was dramatically changed at III MEF. Scheduled training and fielding were accelerated due to "real world" situations. The equipment was turned over to the units, however no training was given per III MEF's request. Training for IOW/R will be held at a later date if requested by the MEF.

3.3.2.0 Fielding Status

- IOS
  - I MEF = 42 V1's, and 23 V2's
  - II MEF = 49 V1's and 23 V2's
  - III MEF = 29 V1's and 16 V2's
  - MARFORRES = 24 V1's and 11 V2's
  - MARFORPAC/Kaneohe Bay = 9 V1's
  - School Houses and SDF's = 36 V1's and 15 V2's
- Version 2 for Intel (Engineering Change Proposal) consisted of 30 GB Databook, HP4550N Printer, memory upgrades for the laptops and servers, and CD R/W drives for the laptops
- The fielding for the IOS ECP equipment is 98% completed.

Our Fielding Approach

- Contractor Maintenance
- Spares at Each MEF
- System Software Support
- Classified Hard Drive Repair
- New Equipment Training

A COMPLETE PACKAGE!

Training

- **New Equipment Training (NET)**
- **Expeditionary Warfare Training Group**
  - -- Unit Operations Specialist
  - -- Ground Operations Specialist
- **Navy Marine Corps Intelligence Training Center**
  - -- Intelligence Training Courses
- **MAGTF Integrated Systems Training Center**
  - -- Scenario Based Training
  - -- Modular Approach
  - -- Tactics, Techniques & Procedures
- **Contractor Site Representatives**
- **Computer Based Training**

TCO Formal Training

- Training is on going at Expeditionary Warfare Training Group, Atlantic and Pacific
  - Unit Operations Course, 2 weeks, Secondary MOS 8711
  - Ground Operations Course, 2 weeks, Secondary MOS 8712
- Both schools are included in the periodic refresh of tactical IOS servers and IOW workstations (systems are used for familiarization)
- Classrooms are set up with non-tactical workstations to conduct operator training

Other Training

- Command Control Personal Computer (C2PC) Trainers at I and II MEF
- New Equipment Training (NET) incident to each IOS and IOW Refresh
- Mobile Systems Training (MTT) provided for periodic hardware & software upgrades

- MAGTF Integrated Systems Training Centers (MISTC) are being established at each MEF

  -- “Beyond the schoolhouse” training emphasis

  -- Tactics, Techniques & Procedures

  -- Scenario Based Training

  -- Modular Training Approach

  -- Staffed with experienced former Marine C4I Specialists

Tactical Combat Operations

MARCORSYSCOM Product Group C4ISR has worked with Dr. Bailey in establishing the new MISTC training facilities at each MEF.

USMC C4I Training Prior to MISTC

GCCS	TBMCS	IOSV1	IOSV2	AFATDS	IOW	EPLRS	DACT
5 – 33 Days	4 - 30 Days	TBD	15 - 25 Days	30 Days	2 – 19 Days	TBD	TBD
EWTG (JOPES) FCTCL (COP)	Hurlburt FITCPAC	TBD	NMITC	Ft. Sill	EWTG NMITC	TBD	TBD

Mission Statement

The Center of Excellence for Marine Corps C4I Systems Training will develop and instruct solid Techniques and Procedures which support the Tactics employed by a MAGTF in their use of C4I systems and applications to facilitate the Commanders' ability to Command and Control (C2).

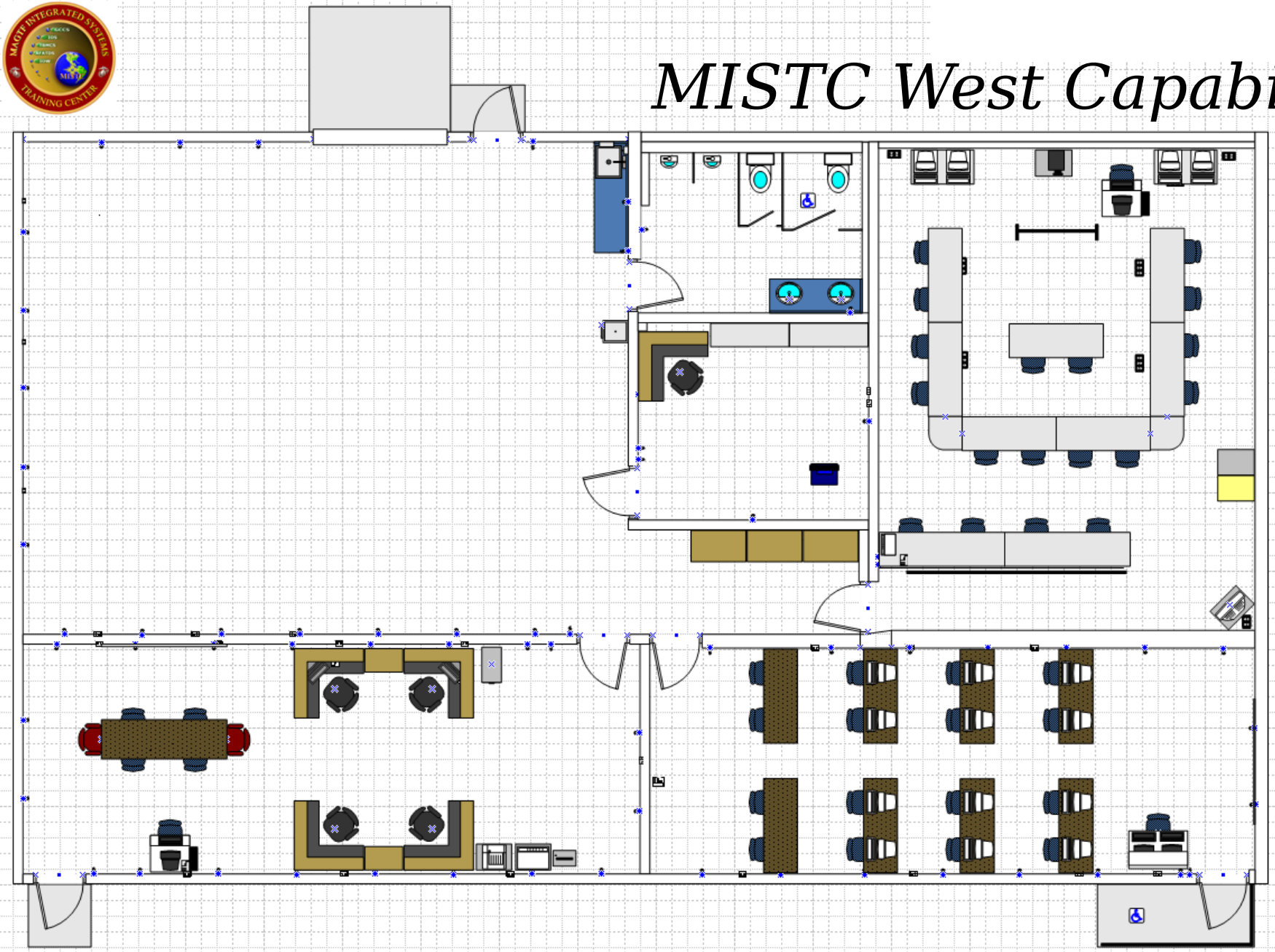
Solution: MISTC

- MISTC facilities throughout the FMF will conduct unilateral operational systems interoperability training.
- Training consists of, but is not limited to, the C4I systems and applications fielded to the FMF.
- MISTC West and follow-on MISTC facilities will validate an integrated systems training model through the completion of FY-03.
- Currently in the U.S. Marine Corps Training and Education Command's (TECOM) FY-04 POM.

Solution: End State

The progressive culmination of , Techniques and Procedures which match the Tactics for operationally employing the INTEGRATED use of MAGTF C4I system(s).

MISTC West Capabilit



MAGTF Integrated Systems Training Center

BLDG 53380 CAMP HORNO
CAMP PENDLETON, CA

MISTC Today

Capabilities

- Three (3) Personnel:
- Organic Systems:
  - (1) GCCS
  - (1) IOS V1
  - (1) IOS V2
  - (1) AFATDS
  - (6) IOW's
  - (1) UOC Prototype
    - (No Safety Certification)
  - (2) Exchange Servers
  - (1) Web Server
  - (15) Dell Desktop Computers
- Connectivity:
  - Non-Secure Internet Protocol routed Network (NIPRNET)
  - Dish Network Satellite Television

Limitations

- Three (3) Personnel:
- Organic Systems:
  - (1) GCCS
  - (1) IOS V1
  - (1) IOS V2
  - (1) AFATDS
  - (6) IOW's
  - (1) UOC Prototype
    - (No Safety Certification)
  - (2) Exchange Servers
  - (1) Web Server
  - (15) Dell Desktop Computers
- Connectivity:
  - Non-Secure Internet Protocol routed Network (NIPRNET)
  - Dish Network Satellite Television

MISTC Facility Locations

MAGTF Integrated Systems Training Center (MISTC)
WEST
Building 53318, Camp Horno
Box 555300
Camp Pendleton, California 92055-5300

Director, Todd Moore.
Commercial: (760) 763-2180/4181
DSN 361-2180/4181
Fax: (760) 763-2179

MAGTF Integrated Systems Training Center (MISTC) EAST
Building H-1
Littoral Warfare Training Center
Camp Lejeune, North Carolina

Director, Mike McDermott
Commercial: (910) 451-0117
DSN 751-0117
Fax: (910) 451-0117

MAGTF Integrated Systems Training Center (MISTC)
OKINAWA
Building 4163
Camp Courtney
Okinawa, Japan

Director, Amber Jones
jonesa@iiimef.usmc.mil

TCO / IAS Training POM

The TCO Project Office includes in its POM planning process support for the TCO sustainment training courses on going at EWTGLANT & PAC. This support includes funding for instructors, curriculum upgrades, and hardware and software upgrades.

The IAS Project Office includes in its POM planning process support for the IAS sustainment training courses on going at NMITC. This support includes funding for instructors, curriculum upgrades, and hardware and software upgrades.

AFATDS / IOS Interface

- 1997 - AFATDS segment ported to JMCIS 2.2.0.5.
  - Demonstrated during JWID 97 on Coronado
  - Both AFATDS and JMCIS on same workstation

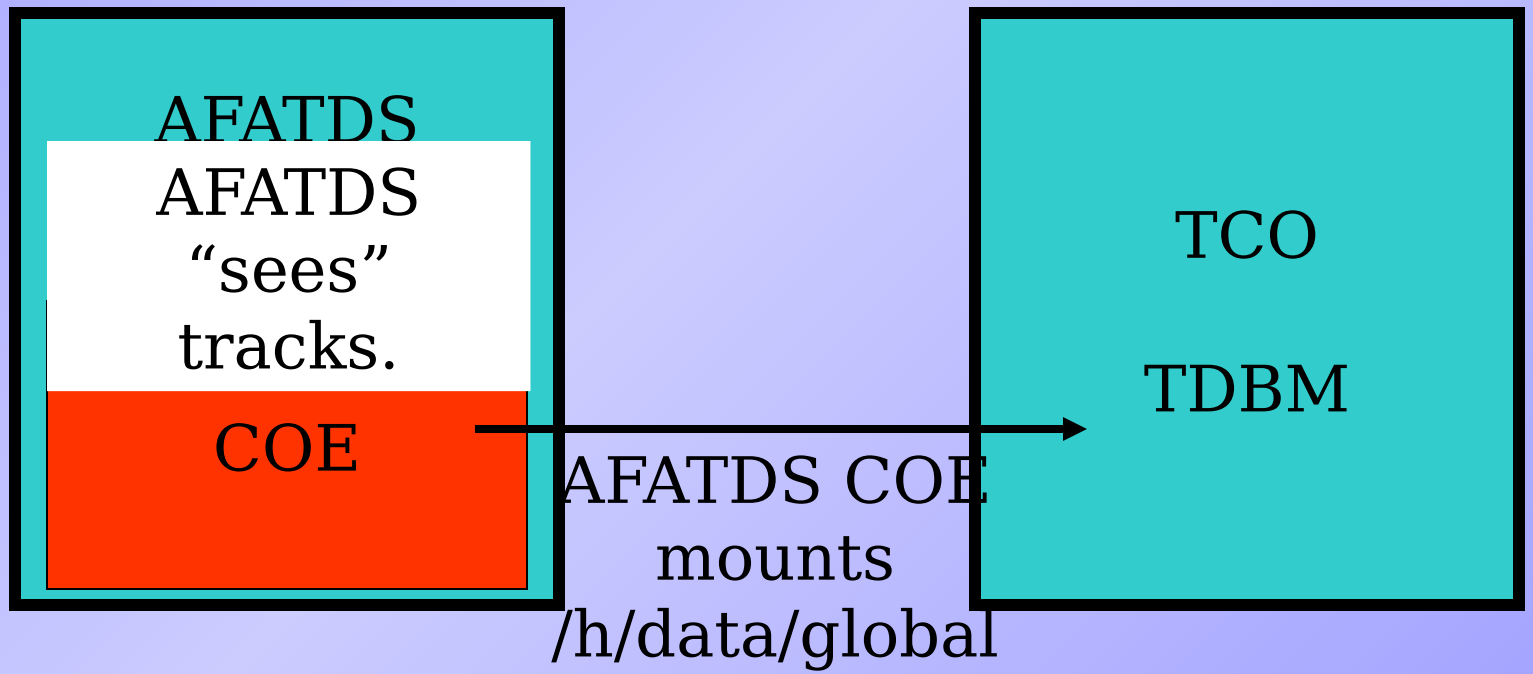
A98 Capabilities

- Allows connection to TCO.
- Allows AFATDS to match and update unit data from track database.
- Allows TCO to receive updates of track data from AFATDS unit database.
- Allows AFATDS operator to filter by unit type (no Navy units update from AFATDS; no Army units update from TCO)
- Allows AFATDS to send geometry as an overlay.
  - An overlay named JMCIS overlay is created
  - Each new transmission replaces overlay data
  - Data must be “pushed” by AFATDS operator

A98 Capabilities

- Allows TCO to send overlay data to AFATDS.
  - All geometry created as general lines, areas or points
  - Blue overlay lines = friendly geometry
  - Red overlay lines = enemy geometry
  - Other color lines, units, text, arcs and ellipses are not created as geometry

A98


AFATDS
AFATDS
“sees”
tracks.
COE
AFATDS COE
mounts
/h/data/global
TCO
TDBM

A98

- The Good
  - First operational interface.
  - Basic operational concept defined.
  - Allowed basic functionality.
  - Explored “problem space.”
- The Bad
  - Operator required to make connection in COE SYSADMIN account…
    - Additional training burden
    - Start up time increases to almost 30 minutes.
  - Failure to connect results in FESMJ process deaths…
    - Reconfigurations result
      - 12 reconfigurations result in AFATDS shutdown.

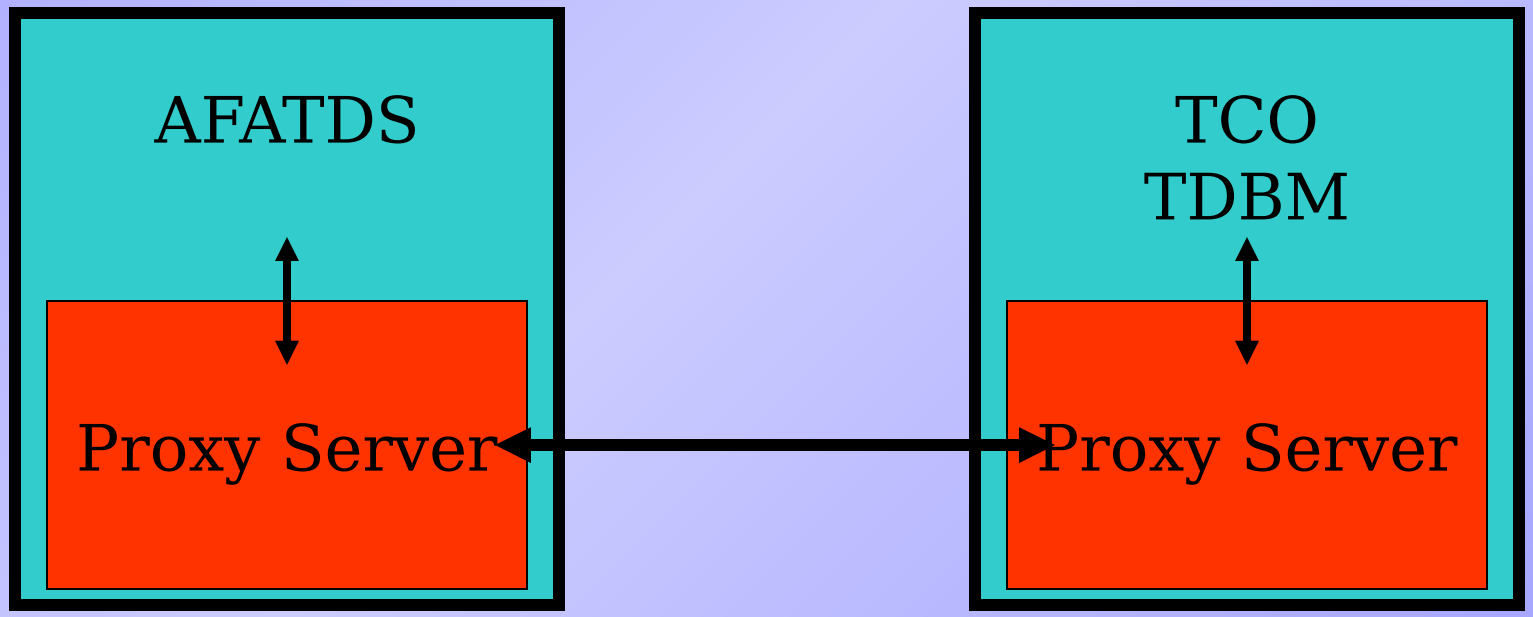
A98 - The UGLY

- Problem identified in A98C.0.16-TCO caused failure to connect if TDB was not configured to default number of tracks.
  - Fixed in A98C.0.19
- UB patch level differences caused A98 to not be able to connect reliably to IOS.
  - Resulted in I MEF “possibility for fratricide” message.

V6.3.0.0 (A99)

- Updates:
  - Primarily in “how” connection is accomplished.
  - Basic data exchange remains the same as A98.
  - Army units can be updated from IOS; Navy units can be updated from AFATDS
- Problem:
  - AFATDS and IOS are no longer operating on compatible versions of COE!
  - Use of TDBM client is no longer feasible.
    - Proxy server instituted.

Proxy Server



V6.3.0.0 - The GOOD

- Proxy server overcomes COE version differences.
- Requires no sysadmin set-up.
  - Operator opens **JMCIS Interface** window
  - Enters IOS unit name
  - Enters IOS IP
  - Selects desired filtering
  - Setup accomplished in less than a minute

- Prior to material release, the following enhancements were added:
  - Utility added to change IP address and set subnet mask on permanent LAN.
  - Utility added to remove track ID’s from AFATDS unit database.

V6.3.0.0 - The BAD

- Interface can only be established on the permanent LAN.
  - Requires SIPRNET and external comm on LAN interface that must be configured on boot-up.
  - Requires use of fixed domain name “1bde.4id.army.mil”

V6.3.1.0 Improvements…

- Allows AFATDS-IOS interface to operate on any external communications interface.
- Creates geometry types base on IOS overlay naming convention.

AFATDS - TCO Interface Summary

- Lessons learned have improved interface capabilities over versions.
- A number of challenges still exist and will exist for some time.
- To integrate MAGTF C4I, short term, compromise solutions are required.

- Problems are systematic and require a systems approach for long term resolution.
  - What system owns what data?
  - Where is the common picture merged?
  - What communications nets/media support which systems?
  - How does the system operate in a Navy-USMC or Joint environment?

Follow-On Efforts

- Version 3.6 Release
  - System of Systems
    - GCCS, IOS, IOS, DACT, IOW, ENM, MEF IAS
  - Build ready for MCTSSA SoST Jan 03
    - Verify Interoperability
    - Measure Speed of Service
    - Validate System Behavior
  - Incorporate
    - C2PC 5.9.0
    - DII/COE 3.6

Follow-On Efforts

- 4.X Migration
  - Currently benchmarking 4.5
    - Built for enterprise servers
    - Multi-tier software architecture
      - App Server
      - Database server
      - Presentation server
    - Early results indicate IOS server marginally sufficient
    - Trade study underway to identify emerging server & workstation technology
    - 4.Scheduled for release in June 04

Follow-On Efforts

- IOS Trade Study
  - Identify if single server type would support C2 Family of Systems
  - Web survey being conducted
    - https://tacmobile.spawar.navy.mil/ios
      - Servers, Workstations
      - Project Officers, Fleet Users, Engineers
- Server Consolidation
  - Study investigating technical feasibility of combining IOS V1 / V2 and GCCS onto single a server
  - Initiated by UOC program

How To Stay In Touch

IOW Web Site Information

- Maintained by SPAWAR Charleston
- TCO, IAS & Other USMC Programs

http://tacmobile.spawar.navy.mil

- Program Documentation
- Logistics Documentation
- Training Information
- Links to Other Sites

For Additional Info…

Capt Eric Peck (TCO Project Officer)
(703) 784-0849
peckea@mcsc.usmc.mil

SSgt Robert Hayes (Assistant IAS Project Officer)
(703) 784-0982
hayesrd@mcsc.usmc.mil

Nancy Straight (TCO / IOW / ENM Project Engineer)
(843) 218-5363
straighn@spawar.navy.mil

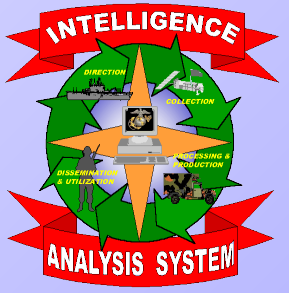
For Additional Info…

Steve Piaskowski (TCO ILS Officer)
(703) 784-0867
piaskowskisf@mcsc.usmc.mil

George Seargeant (IAS ILS Officer)
(703) 784-0962
seargeantgj@mcsc.usmc.mil

Paul Dahlia (SPAWAR ILS Support)
(843) 218-4620
dahliap@spawar.navy.mil


TACTICAL COMBAT OPERATIONS
TCO
COMMAND AND CONTROL


INTELLIGENCE
DIRECTION
COLLECTION
ANALYSIS SYSTEM

QUESTIONS?